

REMARKS

The invention concerns the preparation of polycarbonate by the known continuous two-phase interfacial polycondensation process wherein diphenol(s), phosgene and chain terminator(s) react in the presence of a catalyst. The invention resides in the finding that the objective of limiting the amount of nitrogen in the resulting polycarbonate is attained by maintaining the concentration of catalyst at a level that is at least 0.012 mol per mol of diphenol(s).

Claims 1-4 stand rejected under 35 U.S.C. 102(b) said to be anticipated by U.S. Patent 5,235,026 to Wulff et al. (herein Wulff)

The standard for anticipation is one of strict identity. To anticipate a claim for a patent, a single prior art document must contain all the essential elements of the claimed invention. In Re Donohue 226 USPQ 619.

Wulff that disclosed a continuous process for the production of polycarbonate by two-phase interfacial polycondensation concerns the avoidance of secondary reactions and describes implementing of certain process steps. In Wulff's process catalysts are merely optional (column 3 line 38) and the working examples reported the use of no catalyst. Nowhere mentioned in Wulff is the level of catalyst, a key requirement of the present invention.

The Examiner's comment respecting alkali metal hydroxide is not completely understood as there is nothing in the record that points to that "alkali metal hydroxide" is a catalyst in the context of the claimed process. As the Examiner is certain to know, in the course of the interfacial polycondensation process the alkali metal hydroxide forms sodium chloride and sodium carbonate and thus taking part in the process cannot be viewed as a catalyst is the reaction.

Set against the standard referred to above it is clear that Wulff does not anticipate the presently claimed invention. The rejection alleging anticipation is clearly untenable and its withdrawal is respectfully urged.

Claims 1-4 stand rejected under 35 U.S.C. 103(a) said to be unpatentable over Wulff.

Applicants respectfully assert that Wulff falls short of the prima facie case because it includes nothing to suggest, much less describe the relative amounts of catalyst and diphenol as presently required. The rejection alleging obviousness is factually unsupported and its retraction is urged.

Yet even if Wulff did amount to the prima facie case, the evidence presented in the application supports the patentability of the present claims. Attention is called to the working examples (pages 12 et. seq.) that show the concentration of catalyst to be key in determining the concentration of nitrogen in the resulting polycarbonate.

For the Examiner's convenience these relationship are tabulated below:

Example	catalyst ¹ (x10 ⁴)	YI ²	viscosity ³	phenolic OH ⁴ (ppm)	nitrogen ⁵ (ppm)
1	163	1.33	1.196	90	8
2	179	1.32	1.193	70	5
3	260	1.29	1.194	80	3
C1	107	1.4	1.196	90	30
C2	104	1.45	1.193	70	35
C3	105	1.38	1.196	75	42

¹ - concentration of catalyst (mol/mole of Bisphenol A)

² - yellowness index measured in accordance with ASTM E 313

³ - relative viscosity measured in accordance with ISO 1628/4

⁴ - measured by UV spectroscopy at 546 nm after a color reaction of the phenol. end groups with TiCl₄

⁵ - measured in accordance with ASTM D 4629 and DIN 51444 (determination of nitrogen by the Antek method).

The results clearly demonstrate that, surprisingly, the content of nitrogen in the resulting polycarbonate critically depends on the concentration of the catalyst. Importantly, since to reduce the nitrogen content the art-skilled would seek to limit

the amount of the nitrogen source, namely the catalyst, the showings that the lowest concentration of catalyst are associated with highest nitrogen content are counter-intuitive. The relationship between these parameters has neither been described nor suggested in the cited art.

Reconsideration and withdrawal of the rejection alleging obviousness over Wulff are requested.

Believing the above represent a complete response to the Office Action and that the application is in condition for allowance, applicants request the earliest issuance of an indication to this effect.

Respectfully submitted,

By _____ 

Aron Preis
Attorney for Applicants
Reg. No. 29,426

Bayer MaterialScience LLC
100 Bayer Road
Pittsburgh, Pennsylvania 15205-9741
(412) 777-3814
FACSIMILE PHONE NUMBER:
(412) 777-3902
jdg/preis/ap042